

NUCLEAR RESONANCE APPLICATIONS FOR ENHANCED COMBUSTION

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ABSTRACT OF THE DISCLOSURE

A method of enhancing the combustion process by stimulating one or more
5 components of a fuel/air mixture using nuclear resonance to selectively reduce or
increase the oxidation of selected components of the combustion reaction, e.g., nitrogen
(N-14) or hydrogen (H-1). The method can utilize either nuclear magnetic resonance for
H-1 or nuclear quadrupole resonance for N-14. Stimulation of the components can occur
before, during, or after the combustion reaction in the combustion area. Stimulation with
10 an electromagnetic pulse can be synchronized with the combustion reaction. A feedback
system is used to sense one or more operating parameters of the combustion reaction, and
adjust the nuclear resonance stimulation based on sensed operating parameters. For
example, if the stimulation is an RF signal having a beginning frequency, this frequency
can be adjusted based on sensory information regarding gas levels or temperature in an
15 exhaust stream.